

Alaska Department of Fish and Game
Division of Wildlife Conservation
September 2002

Effects of Oilfield Development on Calf Production and Survival in the Central Arctic Herd

Stephen M. Arthur

Research Performance Report
1 July 2001–30 June 2002
Federal Aid in Wildlife Restoration
Grant W-27-5, **Project 3.46**

This is a progress report on continuing research. Information may be refined at a later date.

If using information from this report, please credit author(s) and the Alaska Department of Fish and Game.

**FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

PROJECT TITLE: Effects of oilfield development on calf production and survival in the Central Arctic Caribou Herd

PRINCIPAL INVESTIGATOR: Stephen M. Arthur

COOPERATOR: Phillips Alaska, Inc.

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR.: W-27-5

PROJECT NR.: 3.46

WORK LOCATION: Unit 26B

STATE: Alaska

PERIOD: 1 July 2001–30 June 2002

I. PROGRESS ON PROJECT OBJECTIVES

OBJECTIVE 1: Estimate annual pregnancy and birth rates of caribou cows.

Radiotracking flights were conducted from 4–7 June 2002 to determine parturition rates. A total of 76 caribou were found. Parturition rates were 87% ($n = 54$) for females ≥ 4 years old and 75% ($n = 12$) for 3-year-olds.

OBJECTIVE 2: Estimate survival of female calves to yearling age class and determine causes of mortality.

Sixty neonatal calves were captured and radiocollared on 6–7 June. Survival rates of these calves will be assessed during FY03. Kaplan–Meier estimates of calf survival from June to August 2001 were 0.74 (95% CI = 0.59, 0.89) for calves captured in the eastern area, and 0.81 (0.67, 0.95) for calves captured in the western area.

OBJECTIVE 3: Estimate rates of growth and weight gain by calves during summer.

Weights and metatarsus lengths were recorded for all calves captured in June. Calves that were initially captured during June 2001 were recaptured during 7–9 September. Of the 50 calves thought to have survived until then, 2 could not be located. The remaining 48 (24 each born in the eastern and western areas) were captured by net gun, weighed, and measured. Mean weight gain was 36.1 kg ($s = 3.9$) and 34.1 kg (3.9) for calves born in the

eastern and western areas. Metatarsus lengths increased by 6.9 (1.0) and 6.8 (1.2) cm in the eastern and western areas.

OBJECTIVE 4: Assess changes in location, physiography, and vegetation of calving sites among years.

Locations of captures were assumed to indicate birth locations, because all captured calves exhibited physical and behavioral traits characteristic of newborn caribou (lack of coordination, small size, appearance of umbilicus and hooves, etc.). These locations were mapped and will be compared to similar data from future years. Vegetation at each site was classified and photographed for future, more-detailed analysis.

OBJECTIVE 5: Monitor movements of caribou to determine winter and summer distributions.

Collared calves were located several times per week during late June, and at approximately 2-week intervals during July and August. Additional tracking flights were conducted in early September and late February. During the February flights, 61 radiocollared cows were located in addition to 46 calves. Distributions of collared caribou were recorded and mapped using a fixed kernel utilization distribution model. Summer distributions of calves caught in the 2 areas overlapped, and calves sometimes switched sides, but some degree of fidelity to each side was evident. Winter distributions showed no segregation based on area of birth. More sophisticated models will be used to assess spatial segregation between sampling areas in the future.

OBJECTIVE 6: Estimate size of the herd at 2-year intervals using a complete aerial photocensus.

A photocensus planned for summer 2001 was postponed until July 2002 due to scheduling conflicts with the photography aircraft and a very narrow time frame when the caribou were in position for the census to occur.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

Same as above.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

Twenty-five radiocollared calves of the Central Arctic herd were captured, weighed, and measured during the first week of March. Due to budget constraints, all captures were of calves on the south side of the Brooks Range. Mean weights were 49.7 ($s = 6.4$) and 46.9 kg (3.7) for calves born in the eastern and western areas, respectively (Table 1). Mean metatarsus length was 35.4 (1.2) and 35.3 cm (1.3), respectively (Table 2). During the March captures, radio collars on 10 calves were replaced with new collars that will remain active for 3 years or more.

IV. PUBLICATIONS:

None.

V. RECOMMENDATIONS FOR THIS PROJECT

Recommended changes are to reduce frequency of radiotracking during June (when little movement and few mortalities occurred) and extend radiotracking at 2-week intervals through October. Continued assessment of calf size and weight in March will provide an indication of forage conditions on winter range. If sufficient funds are available, this effort should include calves that winter on the north side of the Brooks Range as well as the south side.

VI. APPENDIX

None.

VII. PROJECT COSTS FOR THIS SEGMENT PERIOD

FEDERAL AID SHARE \$13.3 + STATE SHARE \$4.4 = TOTAL \$17.7

VIII. PREPARED BY:

Stephen M Arthur
Wildlife Biologist III

SUBMITTED BY:

Patrick Valkenburg
Research Coordinator

Laura A McCarthy
Publications Technician II

APPROVED BY:

Thomas W. Paul, Federal Aid Coordinator
Division of Wildlife Conservation

Wayne L Regelin, Director
Division of Wildlife Conservation

APPROVAL DATE: _____